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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/560,881	12/13/2005	Frank Reiners	REINERS ET AL.-2 (PCT)	1777
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COLLARD & ROE, P.C. 1077 NORTHERN BOULEVARD ROSLYN, NY 11576			EXAMINER JONES, CHRISTOPHER P	
			ART UNIT	PAPER NUMBER
			4132	
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			09/10/2008	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/560,881	<b>Applicant(s)</b> REINERS ET AL.	
	<b>Examiner</b> CHRISTOPHER P. JONES	<b>Art Unit</b> 4132	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 9-12 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 9-12 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 December 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. ____.                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>20051213</u> .  | 6) <input type="checkbox"/> Other: ____.                          |

## **DETAILED ACTION**

### ***Specification***

1. The disclosure is objected to because of the following informalities: The specification refers to "Patent Claim 1" on page 1, line 2, as well as on page 1, line 14. Patent Claim 1 was cancelled. Appropriate correction is therefore required.

### ***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:  

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
2. Claims 9-12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
3. Claim 9 refers to "(7' 7)". It is unclear whether or not this is meant to limit the phase change material to that depicted in the figures.
4. Regarding claim 9, it is unclear what is meant by the phrase "phase change limits that are different with regard to temperature". It is unclear whether the so-called limit can be anything other than a temperature in which the same claim scope is encompassed by the phrase "phase change temperatures that are different".
5. Claim 10 refers to "downstream from the filter". The specification indicates that there are two directions of flow through the adsorption filter (page 7, lines 17-22). It is therefore not clear which direction is "downstream". Furthermore, it is not clear whether "downstream from the filter" is referring to phase change limits inside, or outside, of the filter.

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6. Regarding claim 10, it is unclear what is meant by the phrase “temperature values of the phase change limits”. It is unclear whether this refers to “phase change temperatures” or something else.

7. Claim 10 refers to “in the adsorption function”. It is not clear whether this phrase defines the direction of “downstream”, or whether it defines a type of phase change limit.

8. Claim 11 recites the limitation “at least two filter areas with PCM material” in line 2. There is insufficient antecedent basis for this limitation in the claim. It is also unclear whether both filter areas are meant to be limited by the requirements of claim 9. It is unclear whether “different” in line 3 refers to a difference present downstream, or whether it is comparing downstream to at least two areas upstream.

9. Regarding claim 11, it is unclear what is meant by the phrase “different phase change limits with regard to temperature”. It is unclear whether the so-called limit can be anything other than a temperature in which the same claim scope is encompassed by the phrase “phase change temperatures that are different”.

10. Claim 12 refers to “downstream from the adsorption filter”. The specification indicates that there are two directions of flow through the adsorption filter (page 7, lines 17-22). It is therefore not clear which direction is “downstream”. Furthermore, it is not clear whether “downstream from the filter” is referring to phase change materials inside, or outside, of the filter.

***Claim Rejections - 35 USC § 102***

11. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

12. Claims 9-12 are rejected under 35 U.S.C. 102(b) as being anticipated by *Pittel* USPN 5,861,050.

13. For claim 9, *Pittel* discloses a filter for fuel vapors (column 1, lines 55-6) to be used for a tank container of an internal combustion engine of a motor vehicle (column 1, lines 11-13), where the filter is regenerable by desorptive countercurrent backflushing (column 6, lines 26-31), the adsorptive/desorptive filter material has heat-storing substances comprised of phase change material (column 1, lines 61-5) in the form of small units (column 3, lines 45-51), distributed within the filter material (column 1, lines 61-5), and the phase change material can have various phase change limits that are different with regard to temperature through the filter (column 5, lines 26-30).

14. For claim 10, *Pittel* teaches using different materials with different phase change limits (column 5, lines 29-30). By using two different phase change materials with different phase change limits, the phase change limits will necessarily increase either during the adsorption function, when downstream is in the direction of object 17 of figure 1, or during the desorption function, when downstream is in the opposite direction of object 17 of figure 1.

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15. For claim 11, *Pittel* discloses a filter with at least two filter areas, for example the area surrounding the object 25 furthest to the left (there are two objects labeled “25”), in figure 1, and the area surrounding the closest unmarked object identical to this object 25, wherein downstream from these areas there are different phase change materials with different phase change limits with regard to temperature (column 5, lines 29-30), for example the phase change materials found in the object 25 furthest to the right.

16. For claim 12, *Pittel* discloses a filter wherein the phase change materials having different phase change temperatures are present at the same time in an end area downstream from the adsorption filter. (column 5, lines 26-30; and figure 1, object 25). In one disclosed embodiment, object 25 of figure 1 may contain more than one phase change material (column 5, lines 26-30). The object 25, furthest to the right, is an end area, downstream, and in one embodiment, may contain more than one phase change material having different phase change temperatures (column 5, lines 26-30).

### ***Claim Rejections - 35 USC § 103***

17. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

18. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.

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2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

19. Claims 9-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Pittel* USPN 5,861,050 in view of *Seki* USPA 2005/0247202 A1.

20. Regarding claim 9, *Pittel* discloses a filter for fuel vapors (column 1, line 55-6) that could be used for a tank container of an internal combustion engine of a motor vehicle (column 1, lines 11-13), where the filter is regenerable by desorptive countercurrent backflushing (column 6, lines 26-31), the adsorptive/desorptive filter material has heat-storing substances comprised of phase change material (column 1, lines 61-5) in the form of small units (column 3, lines 45-51), distributed within the filter material (column 1, lines 61-5), and the phase change material has various phase change limits that are different with regard to temperature through the filter (column 5, lines 26-30).

21. Regarding claim 10, *Pittel* discloses a filter for fuel vapors (column 1, lines 55-6) to be used for a tank container of an internal combustion engine of a motor vehicle (column 1, lines 11-13), where the filter is regenerable by desorptive countercurrent backflushing (column 6, lines 26-31), the adsorptive/desorptive filter material has heat-storing substances comprised of phase change material (column 1, lines 61-5) in the form of small units (column 3, lines 45-51), distributed within the filter material (column 1, lines 61-5), and the phase change material can have various phase change limits that are different with regard to temperature through the filter (column 5, lines 26-30). By using two different phase change materials with different phase change limits, the

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phase change limits will necessarily increase either during the adsorption function, when downstream is in the direction of object 17 of figure 1, or during the desorption function, when downstream is in the opposite direction of object 17 of figure 1.

22. Regarding claim 11, *Pittel* discloses a filter for fuel vapors (column 1, line 55-6) that could be used for a tank container of an internal combustion engine of a motor vehicle (column 1, lines 11-13), where the filter is regenerable by desorptive countercurrent backflushing (column 6, lines 26-31), the adsorptive/desorptive filter material has heat-storing substances comprised of phase change material (column 1, lines 61-5) in the form of small units (column 3, lines 45-51), distributed within the filter material (column 1, lines 61-5), and the phase change material has various phase change limits that are different with regard to temperature through the filter (column 5, lines 26-30), wherein the filter has at least two filter areas, for example the area surrounding the object 25 furthest to the left, in figure 1 and the area surrounding the closest unmarked object identical to this object 25, wherein downstream from these areas there are different phase change materials with different phase change limits with regard to temperature (column 5, line 29-30), for example the phase change materials found in the object 25 furthest to the right of figure 1.

23. Regarding claim 12, *Pittel* discloses a filter for fuel vapors (column 1, line 55-6) that could be used for a tank container of an internal combustion engine of a motor vehicle (column 1, lines 11-13), where the filter is regenerable by desorptive countercurrent backflushing (column 6, lines 26-31), the adsorptive/desorptive filter material has heat-storing substances comprised of phase change material (column 1,



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lines 61-5) in the form of small units (column 3, lines 45-51), distributed within the filter material (column 1, lines 61-5), where the phase change material has various phase change limits that are different with regard to temperature through the filter (column 5, lines 26-30) and are present at the same time in an end area downstream from the adsorption filter (column 5, lines 26-30; and figure 5, object 32).

24. Regarding claims 9-12, in the alternative, if *Pittel* did not explicitly teach the phase change material being in the form of small units, *Seki* teaches a canister with an adsorbent capable of adsorbing fuel vapors and a heat-storage material containing a microencapsulated phase-change material, wherein the phase change material is in the form of small units (see *Seki*, paragraph 60). *Seki* teaches that by controlling the average particle diameters in the heat-storage material, containing phase change material, and the adsorbent, so that the heat-storage material is in the form of small units, the heat storage material can electrostatically adhere to or deposit on the surface of the adsorbent. This allows high heat transfer efficiency and makes it is possible to prevent changes in temperature during adsorption and desorption cycles for an extended period of time (see *Seki*, paragraph 60). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified *Pittel* to include phase change materials in the form of small units in order to increase heat transfer efficiency between the adsorbent and the phase change material.

25. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over *Pittel* US 5,861,050 in view of *Uchino* EP 1113163.

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26. Regarding claim 12, *Pittel* discloses a filter for fuel vapors (column 1, line 55-6) that could be used for a tank container of an internal combustion engine of a motor vehicle (column 1, lines 11-13), where the filter is regenerable by desorptive countercurrent backflushing (column 6, lines 26-31), the adsorptive/desorptive filter material has heat-storing substances comprised of phase change material (column 1, lines 61-5) in the form of small units (column 3, lines 45-51), distributed within the filter material (column 1, lines 61-5), where the phase change material has various phase change limits that are different with regard to temperature through the filter (column 5, lines 26-30) and are present at the same time in an end area downstream from the adsorption filter (column 5, lines 26-30; and figure 5, object 32).

27. In the alternative, if *Pittel* did not explicitly teach an end area containing phase change materials, *Uchino* teaches the use of heat-accumulative material (Fig. 1A, object A2), adjacent fuel vapor absorbing material (Fig. 1A, object A1), in an end area near the atmosphere opening of a fuel vapor treatment canister (Fig. 1A, object 3a), for the purpose of preventing fuel vapor from being released to the atmosphere (column 10, paragraph 30). This conserves fuel vapors which can be regenerated during desorption. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified *Pittel* to include the various phase change materials in an end area for the purpose of preventing fuel vapors from being released to the atmosphere.

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28. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over *Pittel* US 5,861,050 in view of *Seki* USPA 2005/0247202 A1 in further view of *Uchino* EP 1113163.

29. Regarding claim 12, *Pittel* discloses a filter for fuel vapors (column 1, line 55-6) that could be used for a tank container of an internal combustion engine of a motor vehicle (column 1, lines 11-13), where the filter is regenerable by desorptive countercurrent backflushing (column 6, lines 26-31), the adsorptive/desorptive filter material has heat-storing substances comprised of phase change material (column 1, lines 61-5) in the form of small units (column 3, lines 45-51), distributed within the filter material (column 1, lines 61-5), where the phase change material has various phase change limits that are different with regard to temperature through the filter (column 5, lines 26-30) and are present at the same time in an end area downstream from the adsorption filter (column 5, lines 26-30; and figure 5, object 32).

30. In the alternative, if *Pittel* did not explicitly teach the phase change material being in the form of small units, *Seki* teaches a canister with an adsorbent capable of adsorbing fuel vapors and a heat-storage material containing a microencapsulated phase-change material, wherein the phase change material is in the form of small units (see *Seki*, paragraph 60). *Seki* teaches that by controlling the average particle diameters in the heat-storage material, containing phase change material, and the adsorbent, so that the heat-storage material is in the form of small units, the heat storage material can electrostatically adhere to or deposit on the surface of the adsorbent. This allows high heat transfer efficiency and makes it is possible to prevent

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changes in temperature during adsorption and desorption cycles for an extended period of time (see *Seki*, paragraph 60). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified *Pittel* to include phase change materials in the form of small units in order to increase heat transfer efficiency between the adsorbent and the phase change material.

31. Further in the alternative, if *Pittel* did not explicitly teach an end area containing phase change materials, *Uchino* teaches the use of heat-accumulative material (Fig. 1A, object A2), adjacent fuel vapor absorbing material (Fig. 1A, object A1), in an end area near the atmosphere opening of a fuel vapor treatment canister (Fig. 1A, object 3a), for the purpose of preventing fuel vapor from being released to the atmosphere (column 10, paragraph 30). This conserves fuel vapors which can be regenerated during desorption. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified *Pittel* to include the various phase change materials in an end area for the purpose of preventing fuel vapors from being released to the atmosphere.

### ***Conclusion***

32. Any inquiry concerning this communication or earlier communications from the examiner should be directed to CHRISTOPHER P. JONES whose telephone number is (571)270-7383. The examiner can normally be reached on Monday - Thursday, 8:00 AM - 5:00 PM.

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33. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Lavilla can be reached on (571)272-1539. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

34. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

CPJ

September 2, 2008

**/Michael La Villa/**

**Michael La Villa**

**Supervisory Patent Examiner, Art Unit 4132**

**8 September 2008**